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ABSTRACT

A model is presented for the improvement of compensatory early childhood education through more effective use of student and staff time. A framework for research to test the model is also suggested. Sections of the document prefacing discussion of the model include (1) an overview of the historical antecedents and development of early childhood education in the United States and (2) a review of research on the use of student and staff time. The review focuses on studies of allocated time, engaged time (or time-on-task), and academic learning time. Research on teacher behavior and effective teaching practices is also discussed. Other features of the document include listings of antecedents and basic principles related to the Portland diagnostic/prescriptive learning model and a listing of research implications incorporated into the design of the model. Skills to be fostered in staff as the model is implemented are also enumerated. The section providing a framework for research on the model points out requirements for effective field-based studies of early childhood education and offers a table coordinating variables related to early childhood education and appropriate measurement approaches. (RH)

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A MODEL FOR THE MORE EFFECTIVE USE OF TIME AS A MEANS TO IMPROVE SUCCESS OF COMPENSATORY EARLY CHILDHOOD EDUCATION PROGRAMS

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INTRODUCTION

American society faces many challenges as the nation enters the decade of the 1980's. The nexus of these challenges is our education system. The education of the young has been high on the priorities of any society throughout history and the complexities of our present technological world have only served to accentuate this need. Within the American educational community today, the task of providing a sound foundation in basic skills for our country's disadvantaged children has been recognized as being of the utmost importance. Although we must continue our efforts to improve the skills of students throughout the educational spectrum, we have long realized that the best chance to intervene successfully is in the early childhood years.

The first major federally supported commitment to improve the chances of educational success for disadvantaged children was the institution of Project Head Start in the summer of 1965. Few federal programs have enjoyed the public support accorded Head Start and fewer still have engendered such hope in the American public. Because of the high hopes invested in Head Start, the findings of the Westinghouse Study and its claim of a "wash out" of any gains by Head Start graduates after only a few years in elementary school hit the American public particularly hard. This negative public relations perception was certainly exacerbated by a somewhat superficial treatment of complex research findings in the popular press.

At least partially in response to the Westinghouse Report, the U.S. Office of Education planned and implemented the Follow Through Program. Follow Through is perhaps unique, at least for a program of its size, in its commitment to

experimentation and allowing for consciously planned differences in approach or "planned variations"; or, as it has been aptly characterized (Egbert, 1973) -- "finding out what works."

As was the case with the Westinghouse Report, the major evaluation of Follow Through -- Abt IV -- was picked up by the popular press and has been a topic of controversy ever since. However, in addition to the furor in the general press, there was a semi-official critique (The Ford Foundation sponsored House Committee) as well as a continuing series of publications in professional educational journals dealing with the Abt findings.

Certainly a major problem with the Abt report was its concentration on the comparative results from different categories of models. The statement of Richard Anderson of Abt that "the effectiveness of each Follow Through model depended more on local circumstances than on the nature of the model" may or may not be accurate or, more importantly, may or may not be relevant to future policy direction of early childhood education.

In spite of political, theoretical and methodological difficulties, much has been learned about effective and efficient learning for poor, young students from research and evaluation on Follow Through and Head Start, and on early childhood education in general; from studies of teacher effectiveness and from a growing body of research on effective schools and on the educational change process. <u>All this evidence converges on the appropriate management and use of instructional time as a potential key to unlock the doors of learning and opportunity for disadvantaged children.</u>

HISTORICAL ANTECEDENTS

It has been traditional in American education to define primary school as an institution that provided children from approximately age six on with instruction in the basic subjects of reading, writing, and arithmetic. It is only recently that educational programs for children younger than six have been commonplace in America. There have, however, been kindergartens for over 100 years and nursery schools associated with university home economics departments have been in existence since the 1920's. What the general public would refer to as day-care centers pre-date both kindergartens and nursery schools on the American scene. Of these three early childhood education types, it is fair to characterize nursery schools as more oriented toward family life and child development, kindergarten as school and "education" oriented, and day-care centers as primarily custodial care for children who were orphans, abandoned, or whose parents were unable to care for them. (Cryan and Surbeck, 1979).

Despite these antecedents, early childhood education did not begin to affect large numbers of American children until after the Second World War. In fact, it was only such events as Brown vs. Board of Education in 1954 and the Soviet Union's much heralded Sputnik I space spectacular that brought about a national educational reassessment in this as well as other areas. These events and the Civil Rights movement in the early 1960's can be largely credited with the wave of social experimentation that burst forth from Washington to become known as the Johnson Administration's "Great Society Programs."

Perhaps the most daring of the Great Society's program was the War on Poverty. When the Economic Opportunity Act was signed into law in August of 1964, it contained a title providing for early childhood education to be known as Project Head Start. Head Start was originally designed as a summer compensatory program for disadvantaged pre-school children. Its goal was to better prepare them for a traditional school experience. It was operated in that mode in the summer of 1965, but it proved so popular that it was soon a year-round program.

The Office of Economic Opportunity (OEO) was soon planning a program to provide enriched or compensatory education for graduates of Head Start. This program, aptly entitled Follow Through, was planned in 1967 as a service program with an anticipated appropriation level of $120 million. The program was to actually start in 1968 with a greatly reduced budget of $14.7 million.

Before the program began operation, it was transferred from OEO to the Office of Education (OE). It was clear to all that the greatly reduced funding level would not allow a program philosophy geared to serving all or even a significant portion of all poor children nor even all those who had received Head Start services.

OE staff decided it was better policy to put the limited funds available into a research and demonstration effort as a vehicle for studying the effects of a variety of different educational approaches. Even with a low level of funds, it was felt that such a program of "planned

variations" could have tremendous impact. The social action goals were retained as well; in particular, parent involvement and support services such as health, dental, and psychological counseling (Kennedy, 1977).

At its peak in the early 1970's, the Follow Through Program included 22 model sponsors, 173 local projects (of which Portland was one), 50 state education agencies, 84,000 students and their families, and more than 4,000 teachers and other school staff.

As in the case of Head Start, Follow Through eventually fell victim to a widely-reported and often misinterpreted evaluation. This evaluation was the joint responsibility of The Stanford Research Institute (data collection), Abt Associates (data analysis) and OE. The popular press and mass media reported that research showed that there were few or no benefits from the Follow Through experience; indeed, it was purported to prove that in many instances, children were much further ahead who did not participate in Follow Through.

There were two vigorous and almost simultaneous attacks on the Abt report, which became known as Abt IV. The General Accounting Office (GAO) had reviewed a number of EO evaluation contracts, including the Follow Through evaluation. Ralph Nader's Center for the Study of Responsive Law also reviewed this evaluation and sent a critical report to the Secretary of HEW in March, 1972 (Kennedy, 1977). Although the change of administrations and the loss of political support did not follow as closely in time as did the earlier Westinghouse study, the Abt findings have been cited as reasons for Follow Through's current political troubles.

Often education theorists and researchers do not want to consider political considerations as valid or of concern to them. Certainly, research does have a need to remain somewhat aloof from political considerations. It is difficult in today's political climate not to recognize, however, that all levels of government -- Federal, state and local -- are generally deciding what expenditures, programs, and services must be reduced or eliminated. It is rare, indeed, that there is any consideration given to implementing new programs or expanding existing ones.

In this climate of fiscal restraint in response to a constituency that some are describing as primed for a tax payer's revolt, the challenge is to find affordable programs that can produce measurable and documentable results. If there is going to be a future for publicly-funded compensatory early childhood education programs, the educational community must devise strategies and programs that can be proven to increase achievement in terms that can be understood by parents and taxpayers. In the following section, the research on the use of student and staff time is reviewed as the basis for development of a model for the improvement of early childhood education programs in an affordable manner.

TIME AND ACHIEVEMENT

Research on instructional time has sought answers to a number of questions: What is the relationship between the time allocated for the study of a given subject and achievement in that subject? Does increased time-on-task actually produce achievement gains? Is there a more meaningful measure of productive instructional time than the time-on-task concept?

The questions are important ones. As more knowledge is gained about the effects of time factors on educational outcomes, implications emerge for curriculum development, for teacher training, for school staffing and scheduling and for other aspects of the educational process, such as classroom planning and management.

The sizeable body of research on the relationship between instructional time and student achievement is focused on three major instructional time measures:

1. Allocated time: the amount of time scheduled for a learning activity and in which the opportunity to learn is present.
2. Engaged time or time-on-task: the amount of time spent paying attention to a learning activity and attempting to learn.
3. Academic learning time: the amount of time that a student is engaged in a relevant academic task that he or she can perform with high success due to the appropriateness of the difficulty of the task.

The contributions of Dr. William Savard of the Northwest Regional Educational Laboratory to this section of the paper is gratefully acknowledged.

Allocated Time. The concept of Allocated Time was studied by researchers (Fisher, et al., 1978) conducting the Beginning Teacher Evaluation Study (BTES). It should be pointed out that the study, although its title uses the phrase "beginning teachers", was conducted in classrooms of teachers who had several years teaching experience. Other researchers, some well before the BTES was undertaken, also studied scheduled classroom time. Stallings (1975), in a study of first grade classes, observed that scheduled time could vary up to one-and-a-half hours in a school day. Despite attempts to offer standards of instruction, there can be wide variance in scheduled time within a district. Harnischfeger, and Wiley (1978) found a 45-minute variance between two second grade classrooms within a district.

A review of the research studies which focused on allocated time suggested the following hypothesis: "There is a positive relationship between the amount on allocated time for studying a subject and achievement in that subject." Although the studies suggested this hypothesis, the picture which emerges from analysis of the studies is by no means perfectly clear. Considerable numbers of high quality studies support this notion, and nearly as many equally well-done studies deny it. Most of the supportive studies revealed a "modest, but persistent" relationship between allocated time and achievement, especially for low-ability students and especially if greater time allotments are spent in interactive activities with the teacher rather than on homework or seatwork. Several of the studies state in their conclusions that, while time allocations are obviously necessary for learning to take place, increasing allocated time without a comparable increase in activities which facilitate learning is not likely to promote significant achievement gains. Increases in allocated time were even found to have a negative relationship to achievement beyond a certain point and particularly for high-ability students.

Engaged Time or Time-On-Task is closer to the heart of the matter as a predictor of achievement. The studies suggested and overwhelmingly supported the hypothesis that "there is a positive relationship between the amount of engaged time given to a subject and achievement in that subject." Those students who appeared to spend the greatest amounts of time-on-task were higher achievers than those who were off-task by overt or covert measures. Some differences in achievement outcomes were noted, however, for different kinds of on-task behavior. Students who had high engagement rates in listening, discussing, question answering and other kinds of interactive classroom activities achieved more than those who had high engagement rates in only non-interactive activities such as seatwork. As one researcher expressed it, when the students are on- task, but the teacher is not teaching, achievement benefits are modest at best.

Academic Learning Time. Level of difficulty of assigned tasks, for individual students, is the third and critical factor in the effective and efficient use of time (Filby and Marliave, 1977; Fisher, Filby, and Marliave, 1978). An assigned task may be easy or hard. Obviously if a student consistently gets all answers right there is not much learning going on. Nor do students learn if they have very little success. When students consistently fail in assigned tasks there are problems in the area of self-esteem and achievement is lower. Fisher, et al (1978) conclude that time spent on tasks at which students have a high success rate results in more learning than time spent on tasks at which students have a low or even moderate success rate.

Students who test low in academic skills have been observed to be academically engaged a far lower proportion of the time than are students who score higher on academic achievement tests. For example, Evertson (1980) found that low-performing students were engaged in academic pursuits only 40% of the time

while high-performing students were engaged at an 85% rate. This percentage of engagement on-task is expressed as Engaged Rate or ER. An increase in the ER seems to help low-performing students more than high-performing student in making academic gains. (Stallings, 1975).

The studies reviewed which were organized around the Academic Learning Time concept were all well-designed investigations and give rise to the hypothesis that "there is a positive relationship between the amount of academic learning time given to a subject and achievement in that subject." These studies stress the inadequacy of allocated and engaged time amounts (and especially the former) as producers of achievement gains in and of themselves. Instead, these studies focus on the necessity for allocated time, plus task engagement, plus teaching methods and task content which result in the student working at an "appropriate level of difficulty and experiencing success." While these studies do not recommend eliminating seatwork, homework or individual student projects, they do emphasize that interactive approaches such as direct instruction are most effective in increasing the amount of Academic Learning Time expended by students. Of all measures of student learning time, the rate of Academic Learning Time constitutes the best predictor of achievement. Students working on material that is appropriately challenging and which is presented in such a way that interaction occurs between student and teacher and among students, can be expected to make significant achievement gains.

In addition to the three time factors already mentioned, i.e., Allocated Time, Engaged Time and Academic Learning Time, teacher behavior has been identified as yet another key factor by researchers. For instance, Stallings (1980) found that teacher behavior such as grading papers and writing lesson plans

during class time is negatively correlated with academic gain. There are other studies that identify specific teacher behaviors that correlate positively with academic gain. Brophy and Evertson (1976), after observing effective and ineffective third grade teachers, found such factors as frequency of student response opportunities, teacher direction, and teacher preparation to be associated with improvement in achievement test scores. Filby and Cohen (1978) and Stallings (1980) found that teachers' use of corrective feedback was strongly associated with achievement. In a thorough review of teacher behavior literature, Gage (1978) supports these findings.

This wealth of information on effective teaching practices would not hold much hope for improvement in achievement if the skills were difficult to impart or if teachers, despite such evidence, refused to change their teaching methods. Fortunately, Stallings (1980) found that classes with teachers who received feedback on how well they were using effective teaching techniques made significantly greater academic gains during a school year than classes with teachers who received no such feedback. Stallings spotlights the case of a teacher with 20 years teaching experience who readily incorporated the identified effective practices into his teaching. She also noticed that teachers who were trained in the practices that increased Engaged Time maintained their new skills throughout the year and avoided the slump in teaching effectiveness that is common with many teachers in the Spring. Cronin (1980), after interviewing elementary teachers who were ordered to use a structured direct instruction program over two years, also concluded that teachers usually change initially resistant attitudes toward active teaching after trying such methods over a long enough period.

We find a clear message in the research on time factors and the associated studies on teacher and school effectiveness. The findings are consistent and have led us to believe that with an emphasis on teacher training, with careful attention to classroom and school climate, and with a focus on a local adaptation of a structured direct instruction model, the goal of improving the basic skills achievement of disadvantaged K-4 children can be attained significantly and in an affordable manner. In the next section, a model developed to foster attainment of that goal is described, and the principles and lessons from previous research that have led to it are discussed.

THE PORTLAND DIAGNOSTIC/PRESCRIPTIVE MODEL

The goal of the Portland Diagnostic/Prescriptive Model is to increase the basic skills achievement of disadvantaged K-4 students by increasing Academic Learning Time (and Allocated and Engaged Time as well).

The model is based upon the following key antecedents:

- It builds upon and extends the philosophy, commitments, principles, goals and objectives of the district's innovative and successful Early Childhood Education Program.
- It is based upon the findings and methodological advances of previous research and evaluation on Follow Through in particular and early childhood education in general.
- It is keyed to the findings of recent research on time and its use as a critical variable in improving basic skills achievement, especially of disadvantaged young children.
- It draws strength and direction from previous research on school effectiveness, teacher effects, and educational change.
- It is rooted in but not constrained by the research on the relative effectiveness of direct instructional techniques in fostering learning in poor, primary school students.

Drawing upon such antecedents, the following set of basic principles have been developed as a basis for Portland's Diagnostic/Prescriptive Learning Model.

The school must meet each child where he or she is upon entry and must help the student move forward at an optimal personal rate. This requires:

- Comprehensive diagnosis of social, emotional/psychological, physical and academic readiness and developmental level, including identification of learning disabilities.
- Identification of the student's learning style and adaptation of instruction initially to gain success from his or her learning strengths and eventually to strengthen any weaknesses.
- Development of clear and appropriately high expectations for achievement and behavior, and prescription of instructional and support services appropriate to the student's identified readiness levels.
- Provision of prompt and valid feedback on student progress toward meeting expectations.
- Provision of extrinsic and (increasingly) intrinsic rewards for successful progress toward the attainment of outcomes and expectations.
- An active role for the student in learning and in choosing to learn.
- Seeking significant involvement of parents and community members in the life of the school and in working to assist their children to succeed.
- Integration of affordability and benefit-cost considerations into planning and program decisions.

It is not an easy task to plan, mount and evaluate a field-based program of early childhood education keyed to the concept of learning time. The research is unambiguous on the power of increasing Academic Learning Time and, to a lesser degree, of Engaged and even Allocated Time, as a vehicle to improving achievement of disadvantaged young children. It is, however, far from definitive in programmatic specifics.

Nevertheless, we have identified key implications of the research and have incorporated them into the design of the Portland model.

- Time allocations for the different subjects which comprise the curriculum will reflect the relative priorities given to the various subject areas. Since a "modest, but persistent" relationship exists between time allocation and achievement, we will allocate relatively large amounts of time to those subject areas in which student success has been determined to matter the most.

- Efforts will be made to keep the amount of classroom "dead time" at a minimum. Dead time rate, defined as the amount of allocated time during which the opportunity to learn is not present for one reason or another, is sometimes quite high. Business matters (taking roll, collecting lunch money), interruptions, discipline problems and situations in which there is nothing the students are expected to be doing, are pernicious dead time producers. Teachers and others will be encouraged to deal with these matters efficiently so that reasonable amounts of allocated time are present.

- Additional instructional time allotments will be provided for low-ability, low-achieving students, and in an interactive mode. Resource teachers and aides will provide extra time and help and parent-student instruction will be used as a powerful means of enhancing achievement.

- Techniques which can increase the amount of time students spend on-task will be applied. Positive teacher feedback, interactive instructional methods, minimum amounts of dead time and the opportunity for students to select some of their learning activities have been shown to increase engagement rates, and teachers will be encouraged and trained to utilize these approaches.

- Activities and methods which result in greater amounts of Academic Learning Time will be utilized. Teacher familiarity with student academic history and ability level is essential in order that material of an appropriately challenging and rewarding level of task difficulty can be identified and presented.

- Reinforcement of basic skills through interesting and appropriate applications in other fields of study and in school activities will be considered learning time.

The research and experience-based principles and practices in the Portland Diagnostic/ Prescriptive Learning Model are summarized in Figure 1.

FIGURE 1

THE PORTLAND DIAGNOSTIC/PRESCRIPTIVE LEARNING MODEL

Principles (Goals)	Practices
Diagnosis of physical, social and academic readiness.	Comprehensive intake screening, assessment and profiling of: . psychomotor development . visual perceptual development . auditory perceptual development . language development . values development . social development . cognitive development
Identification of learning style.	Development of Learning Map and Contract for each child.
Development of clear and appropriately high expectations for achievement and behavior, and prescription of appropriate instructional and support services.	Development of an Individual Educational Plan for each child covering both learning and support service needs, and locating the student within the sequence of specific learning objectives and experiences laid out in the district's Continuous Progress Curriculum.
Provision of prompt and valid feedback on student progress toward meeting expectations.	Ongoing diagnosis using locally developed diagnostic tests designed to monitor progress within the Continuous Progress Curriculum. These formative tests are extensions of the district's Rasch Based Citywide Achievement Level Tests. As such they are consistent with local curricular priorities, goals and objectives.
Provision of extensive and (increasingly) intrinsic rewards for successful progress towards the attainment of outcomes and expectations.	Development of in-service procedures to assist teachers in increasing their skill in providing positive reinforcement of learning successes.
Monitoring of allocated, engaged and academic learning time.	On-site observation and recording using common instruments procedures and protocols of each of the three key time factors, the contexts in which they occur, and the effects intended and unintended.

The skills that will need to be fostered in staff as such a model is implemented include the ability to:

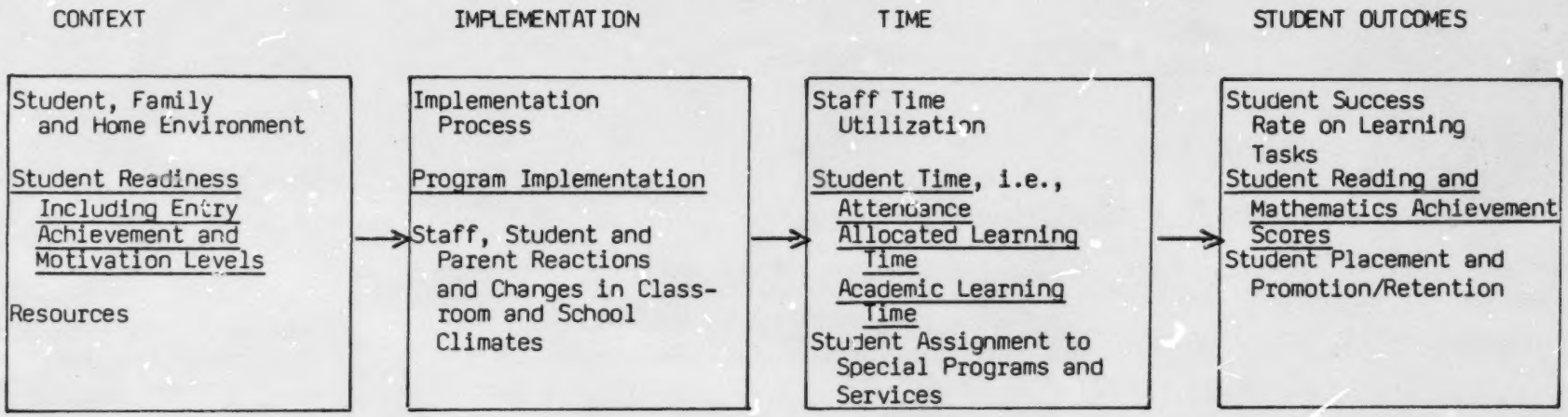
- o Provide opportunities for reading and mathematics as an integrated part of the broader communication process that includes listening, speaking, and writing.
- o Provide learning experiences appropriate to a wide range of interests, abilities, learning styles.
- o Provide opportunities to communicate in different settings with different persons and to quantify in various contexts.
- o Foster children's affective and cognitive development by providing materials, experiences, and opportunities to communicate what they know and how they feel.
- o Continually appraise how other aspects of a child's development affect his or her reading and mathematics development.
- o Use evaluative procedures that are developmentally appropriate for the children being assessed and that reflect the goals and objectives of the instructional program.
- o Ensure feelings of success for all children in order to help them see themselves as persons who can enjoy exploring as well as quantifying and learning to read.
- o Plan flexibly in order to accommodate a variety of learning styles and ways of thinking.
- o Respect the language the child brings to school, and use it as a base for language activities.
- o Plan activities that will cause children to become active rather than passive learners.
- o Provide opportunities for children to experiment with language and numbers and simply to have fun with them.
- o Encourage developmentally appropriate language and mathematics learning opportunities in the home.

A FRAMEWORK FOR RESEARCH ON THE MODEL

Drawing upon lessons learned from past research and evaluation of compensatory early childhood education and on research on teachers' effects, school effectiveness and the educational change process, a simple model of effective schooling has been tentatively formulated to guide research on the Portland Diagnostic/Prescriptive Model. This model is presented in Figure 2.

FIGURE 2

A MODEL OF EFFECTIVE SCHOOLING



The variables and constructs regarded as most central to the research effort have been highlighted by underlining.

Past attempts to document and evaluate the process and effects of compensatory early childhood education programs have shown that this is no easy task. Among the lessons that have been learned about the requirements for effective field-based research on early childhood education are the following:

General:

- o There must be whole-hearted commitment of the participating district and schools.
- o Sufficient time must be provided for planning and implementation in order to assure a well-constructed and fairly-tried experiment.
- o The units of analysis issue must be resolved. Causal effects must be traced as appropriate to the level of the individual child and the classroom, but school and classroom learning environment and climate factors must also be measured and considered. Data on the following variables needs to be gathered and analyzed:
  - context,
  - implementation,
  - time utilization, and
  - student outcomes

  at building, classroom and individual student levels.
- o There must be continual formative monitoring and evaluation not only of the demonstration project and its effect, but also of the documentation/evaluation effort itself.

Context:

- o Data should be collected and analyzed for key student family and home environment variables that two decades and more of research have shown to be most highly predictive of achievement levels. It will be necessary to control for variance in these nonprogrammatic sources in analyzing achievement gains.
- o Data must also be gathered and analyzed from student entry readiness levels both as a means of diagnosing and presenting student learning needs and as a basis for extracting variance in achievement due to these nonprogrammatic influences.
- o Data must be collected and analyzed for resource aspects of the programs in order to evaluate the affordability and cost/benefit aspects of operations and effects.

Implementation:

- o The actual treatments, not just the planned treatments, must be carefully described and effects due to them must be isolated as far as possible from effects due to other causes. The commitment to a significant level of direct on-site observation and documentation as a key part of the research, evaluation and documentation phase should meet this requirement. Of special significance is the assessment of the nature and degree of implementation of each of the principles called for in the Portland model.

- o The implementation process must be accurately described and evaluated to facilitate replication of successful approaches.

- o The reactions of staff, students, and parents to the model and to the implementation process must be assessed in order to provide formative feedback to model implementors and in order to document and evaluate program activities in terms of the critical variables described above. For the most part, significant reactions will be reflected in classroom and school climate measures.

Time Utilization:

- o Data on student attendance must be collected and analyzed as a gross measure of allocated time and as an indirect measure of student and parent motivation for learning success.

- o Data must be collected and analyzed on each of the three key time factors, Allocated Time, Engaged Time, and Academic Learning Time since this is the heart of the effort along with the measures of student achievement.

- o Information must be available on student assignment to special programs and services inasmuch as such assignments can cause time utilization and achievement results to vary significantly.

Student Outcomes:

- o Data must be collected and analyzed for student success rate on learning tasks.

- o There must be curriculum-valid and instructionally-sensitive formative and summative measures for the dependent variable, i.e., improved and sustained gains in basic skills learning of disadvantaged children. Portland's Rasch-based functional level Achievement Testing Program coupled with the diagnostic extensions called for by the model provide for this to an unusual degree.

- o Data must be collected and analyzed for such benchmark student outcomes as placement and promotion-retention.

A tentative set of variables and measurement approaches is offered at this time to assist in the design of research to test the Portland Model.

TABLE 1

Variables and Measurement Approaches

Variables	Measurement Approaches
I. Content	
A. Student, Family and Home Environment	
1. Family Income	Census/Questionnaire
2. Family Education Level	Census/Questionnaire
3. Family Occupation	Census/Questionnaire
4. Family Residence	Census/Questionnaire
B. Student Readiness	
1. Social	Student Intake Process & Profile
2. Emotional/Psychological	Student Intake Process & Profile
3. Physical	Student Intake Process & Profile
4. Cognitive	Student Intake Process & Profile
5. Learning Disabilities or Impediments	Student Intake Process & Profile
C. Resources	
1. Per Pupil Cost	Document Review/Interview
2. Staff/Pupil Ratios	Document Review/Interview
3. Class Sizes	Document Review/Interview
II. Implementation	
A. Implementing Process	
1. Communication	Questionnaire/Interview/Observation
2. Involvement	Questionnaire/Interview/Observation
3. Staff Development	Questionnaire/Interview/Observation
4. Evaluation	Questionnaire/Interview/Observation
5. Incentives	Questionnaire/Interview/Observation
B. Program Implementation	
1. Nature and Degree of Actual Implementation of the Portland Model and its Two Planned Variations.	Observation/Interview
C. Staff, Student and Parent Reactions	
1. Commitment	Questionnaire/Interview
2. Resistance/Support	Questionnaire/Interview
3. Satisfaction	Questionnaire/Interview

TABLE 1 (Continued)

Variables and Measurement Approaches

Variables	Measurement Approaches
III. Time	
A. Staff Time	Documentation/Observation/Protocols
B. Student Time	
1. Attendance	Records Review
2. Allocated Time	Document Review/Observation/ Protocols/Staff or Computer Records
3. Engaged Time	Observation/Protocols/Interview
4. Academic Time	Observation/Protocols/Interview
C. Student Assignments	Document Review/Observation/Interview
IV. Student Outcome	
A. Success Rate	Test Records Review/Computer Data Review/Interview/Observation
B. Student Basic Skills Achievement	Achievement Levels Test Results Diagnostic Test Results (Paper, Pencil, and Computer Based)
C. Student Placement and Promotion/Retention	Document Review/Interview

CONCLUSION

In this paper, a model has been presented for the improvement of compensatory early childhood education through a focus on the more effective use of student and staff time. A framework for research to test the model has also been presented.

The model and the proposed research on it are founded on the belief shared with Irving Lazar that "if you provide high quality education to even the poorest of children they will learn; and the earlier education begins the longer its effects will be obvious." Despite the supposed "wash out" of achievement gains, follow-up studies using baseline data from earlier research efforts that were forerunners of Head Start have found that "program children were less likely to have been assigned to special education classes or to be retained in one or more grades than were the control group children. Program children were also less likely to drop out of school before graduation from high school than were the controls." (Lazar, 1981)

There is also recent evidence that participation in Portland's Follow Through Program consistently raised and sustained Reading and Mathematics Achievement Scores significantly above those of a control group and even frequently above national norms. Thus there is locally gathered hard evidence that our early childhood education programs can have a substantial positive effect on disadvantaged students' basic skills achievement.

We feel that the proposed model has the potential to help us succeed in identifying programmatic approaches to improving the basic skills achievement of disadvantaged primary school children. It seeks to do this by focusing on

effective and efficient increase of real learning time, linked with staff training to ensure behaviors that result in greater achievement, and aided by an emphasis on key climate and support factors identified in the school and teacher effects research. The corresponding proposed program of documentation, evaluation, research, and dissemination holds promise for allowing the reasons for success to be identified and shared.

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